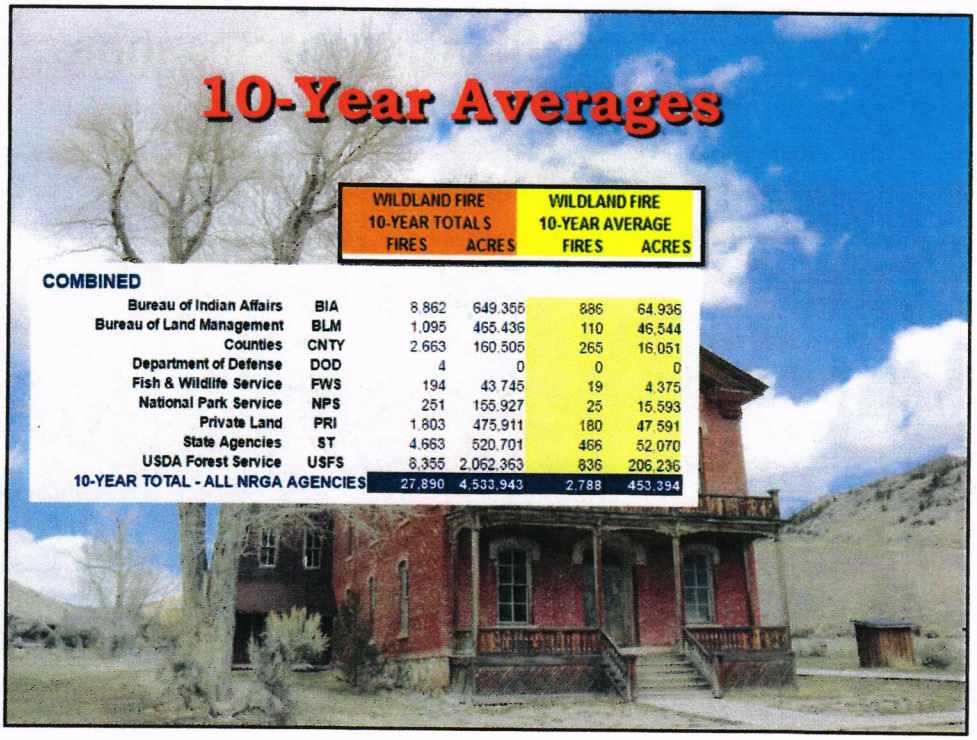
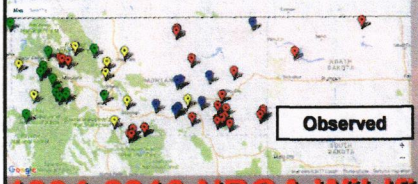


		WILDLAND FIRE 10-YEAR TOTALS		WILDLAND FIRE 10-YEAR AVERAGE	
		FIRES	ACRES	FIRES	ACRES
COMBINED					
Bureau of Indian Affairs	BIA	8,862	649,355	886	64,936
Bureau of Land Management	BLM	1,095	465,436	110	46,544
Counties	CNTY	2,663	160,505	265	16,051
Department of Defense	DOD	4	0	0	0
Fish & Wildlife Service	FWS	194	43,745	19	4,375
National Park Service	NPS	251	155,927	25	15,593
Private Land	PRI	1,803	475,911	180	47,591
State Agencies	ST	4,663	520,701	466	52,070
USDA Forest Service	USFS	8,355	2,052,363	836	206,236
10-YEAR TOTAL - ALL NRGA AGENCIES		27,890	4,533,943	2,788	453,394

Last Year's Outlook...

2016 NRGA Forecast: Normal Through Aug-Sept.



1994-2016 NRGA Wildfire Acreages:

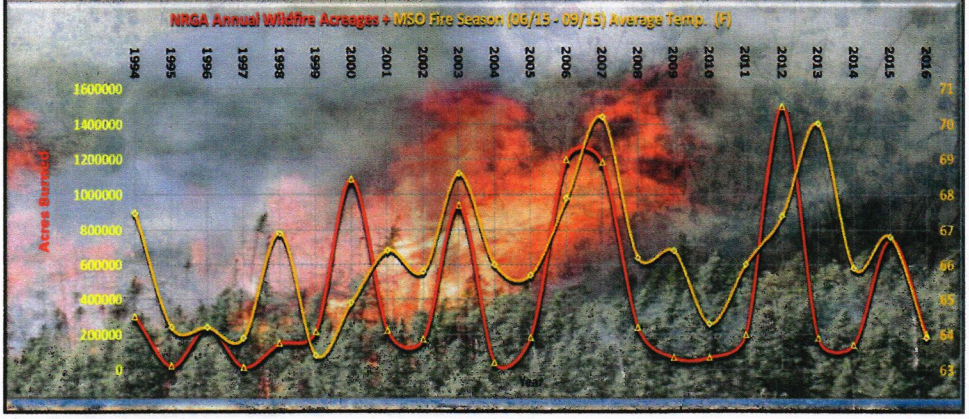
Mean: 405,744
Median: 202,140

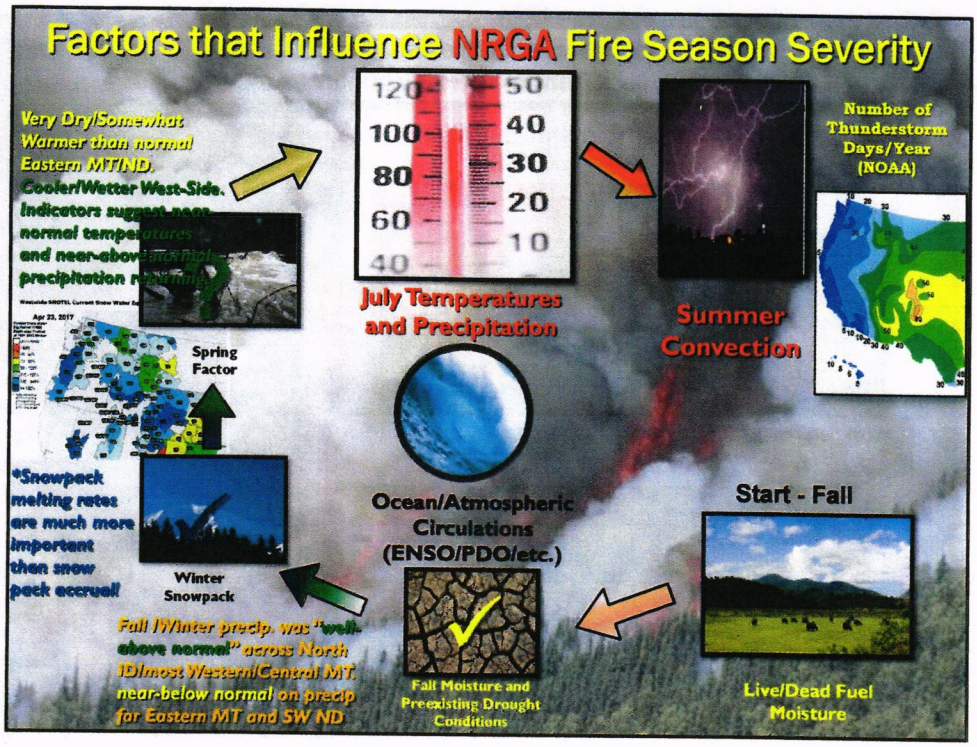
Acres Burned	
2012	1,497,972
2006	1,201,117
2007	1,185,199
2000	1,087,920
2003	942,022
2015	745,947
1994	302,639
2008	241,854
1996	240,962
2001	223,310
1999	218,106
2016	202,140
2011	198,624
2005	185,457
2013	179,459
2002	172,197
1998	150,047
2014	143,271
2010	70,474
2009	69,016
2004	40,840
1995	20,845
1997	15,884

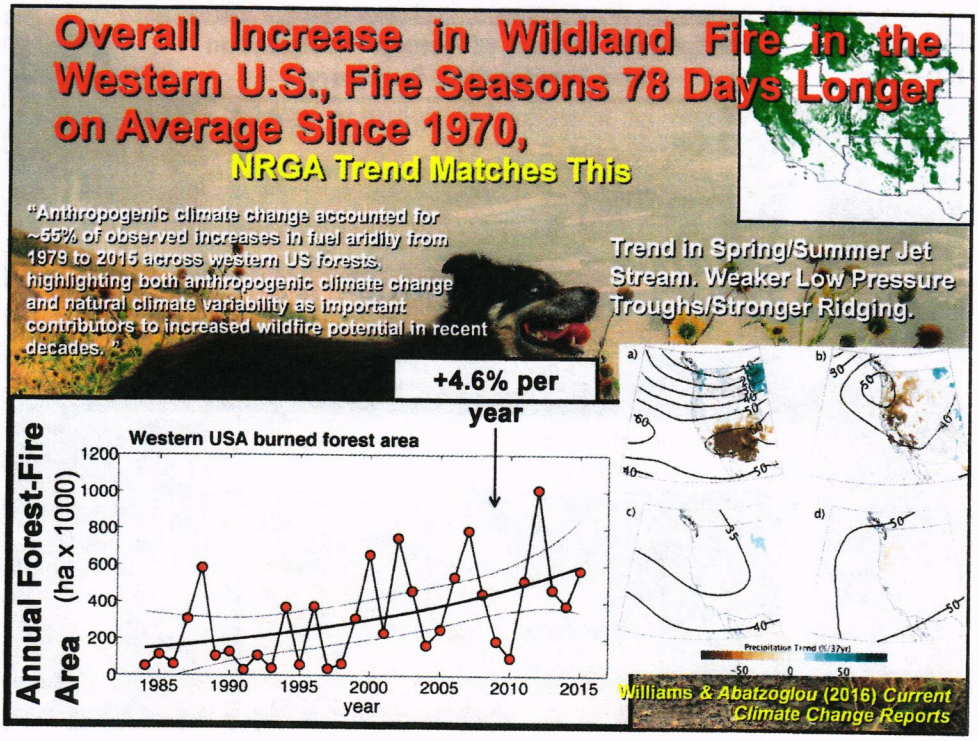
Acres Burned-Six Biggest Seasons

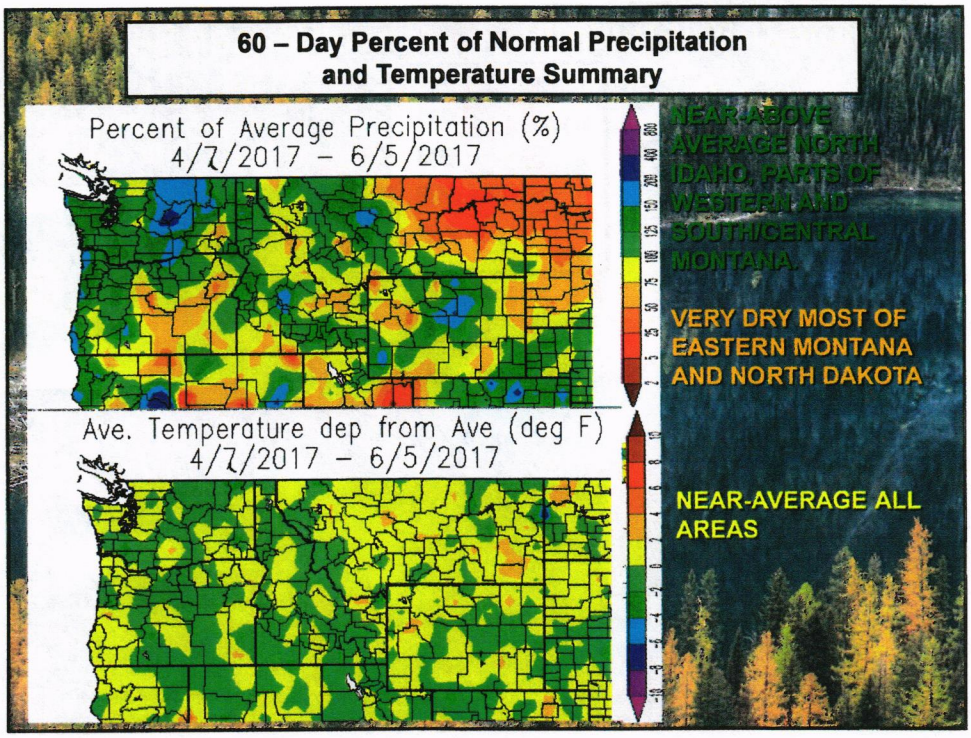
2012 – 1,497,972
2006 – 1,201,117
2007 – 1,185,199
2000 – 1,087,920
2003 – 942,022
2015 – 745,947

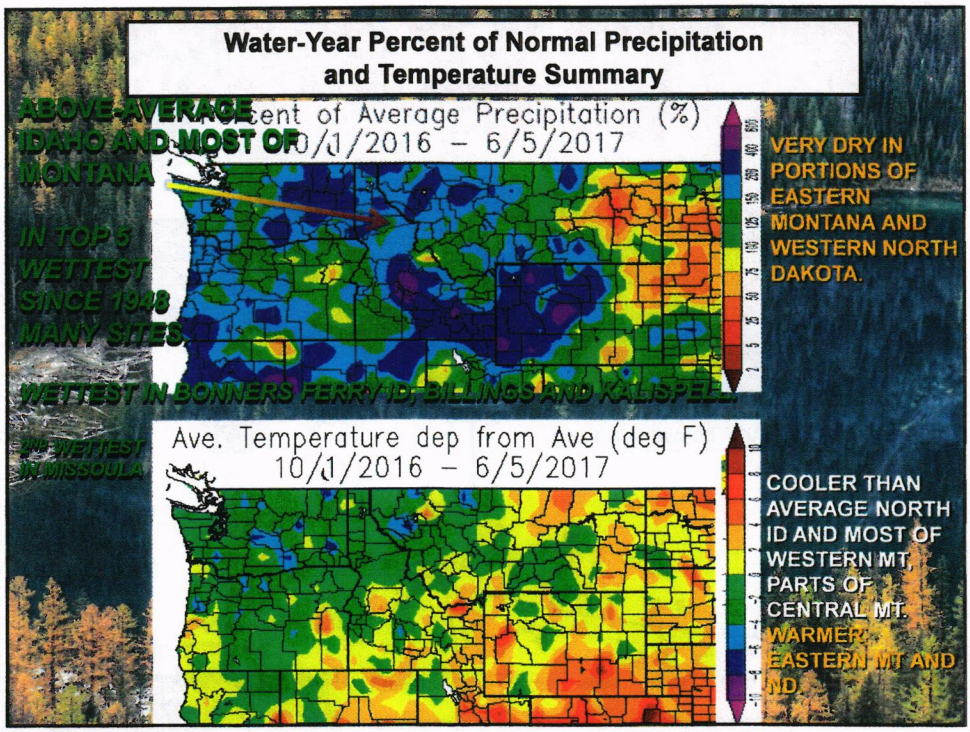
Montana Acreages in Peak Years Have Been 75% or More of NRGA Totals, Except for 2015, Which Was Around 50%.

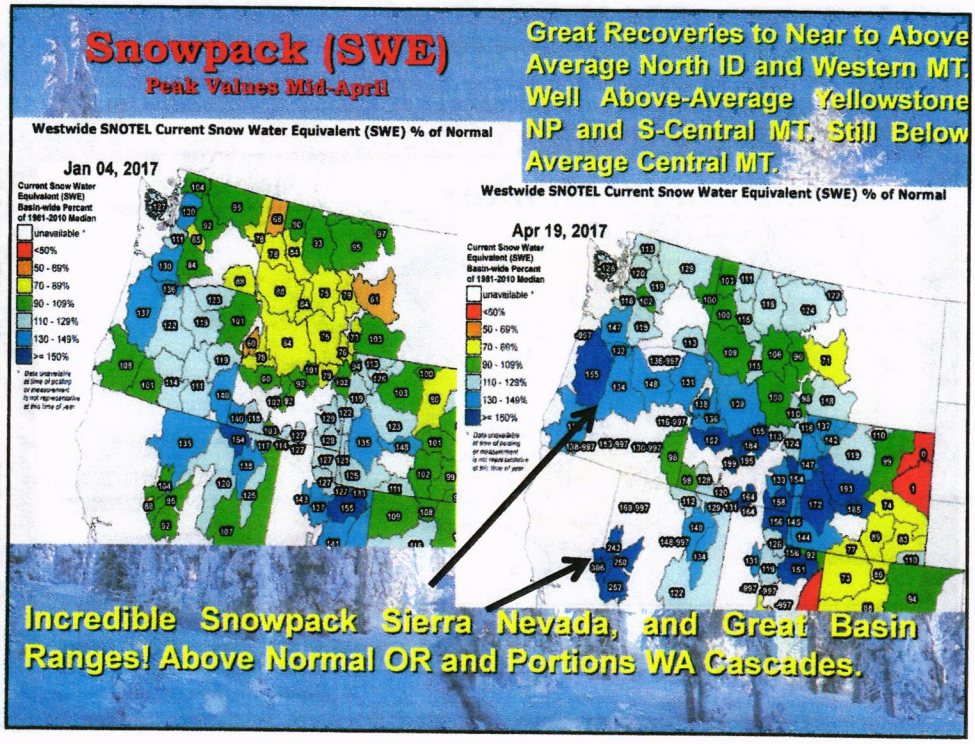


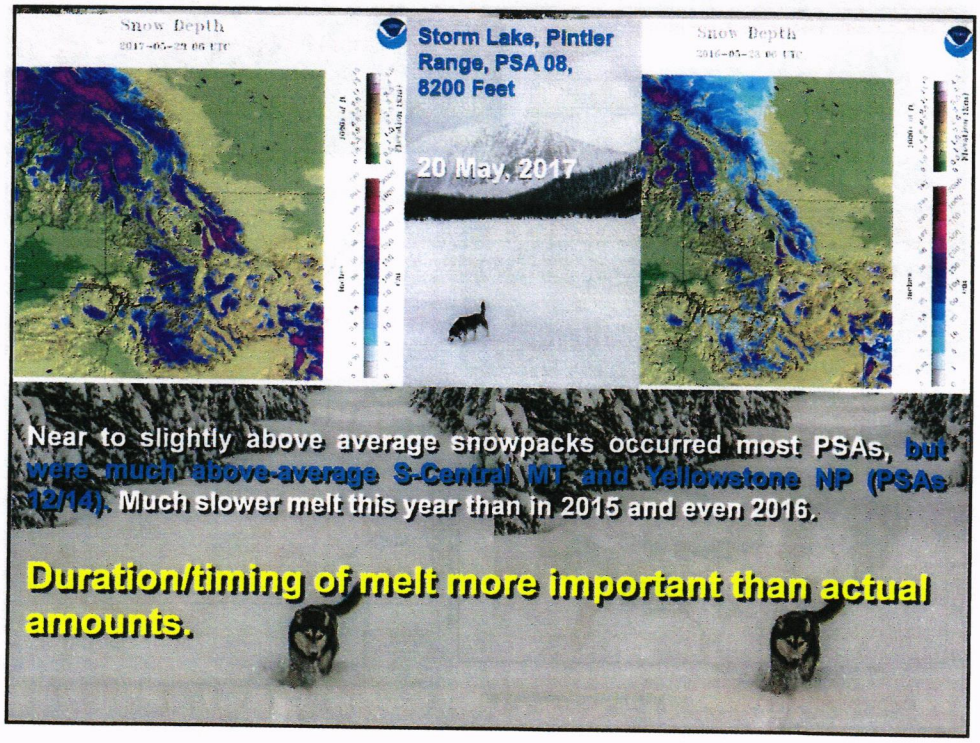

Factors that Influence NRGA Fire Season Severity
Very Dry/Somewhat Warmer than normal Eastern MT/ND. Cooler/Wetter West-Side. Indicators suggest near-normal temperatures and near-above precipitation
July Temperatures and Precipitation
Number of Thunderstorm Days/Year (NOAA)
Summer Convection
Spring Factor
*Snowpack melting rates are much more important than snow pack accrual!
Winter Snowpack
Ocean/Atmospheric Circulations (ENSO/PDO/etc.)
Start - Fall
Fall /Winter precip. was "well-above normal" across North ID/most Western/Central MT. near-below normal on precip for Eastern MT and SW ND
Fall Moisture and Preexisting Drought Conditions
Live/Dead Fuel Moisture

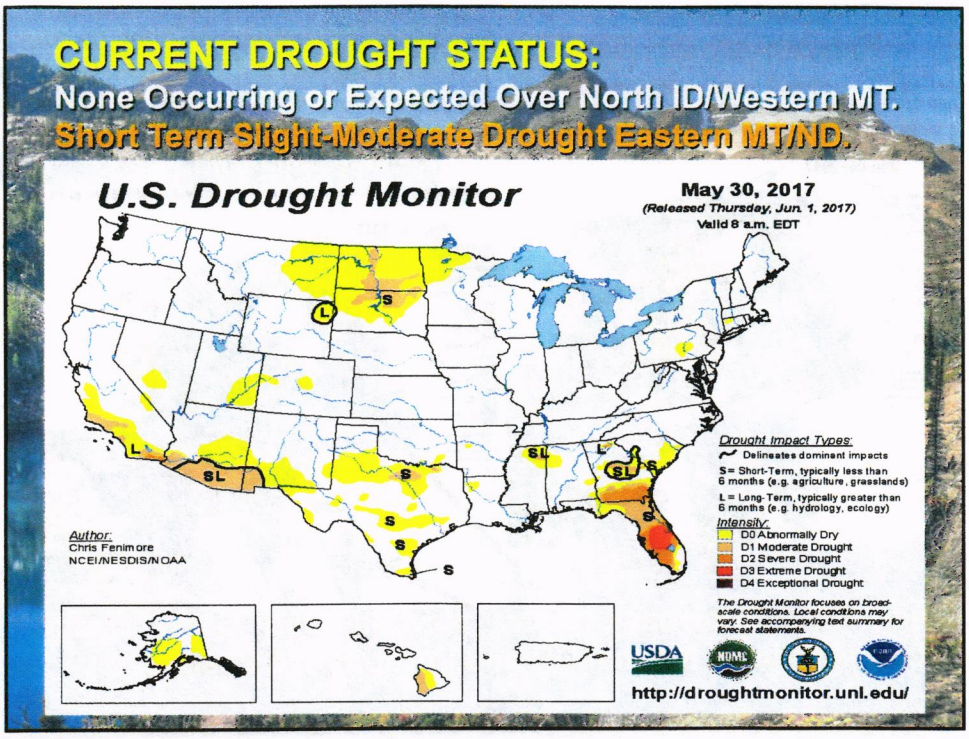

Overall Increase in Wildland Fire in the Western U.S., Fire Seasons 78 Days Longer on Average Since 1970,
NRGA Trend Matches This
"Anthropogenic climate change accounted for ~55% of observed increases in fuel aridity from 1979 to 2015 across western US forests, highlighting both anthropogenic climate change and natural climate variability as important contributors to increased wildfire potential in recent decades."
Trend in Spring/Summer Jet Stream. Weaker Low Pressure Troughs/Stronger Ridging.
+4.6% per year
Western USA burned forest area
Annual Forest-Fire Area (ha x 1000)
year
Williams & Abatzoglou (2016) Current Climate Change Reports

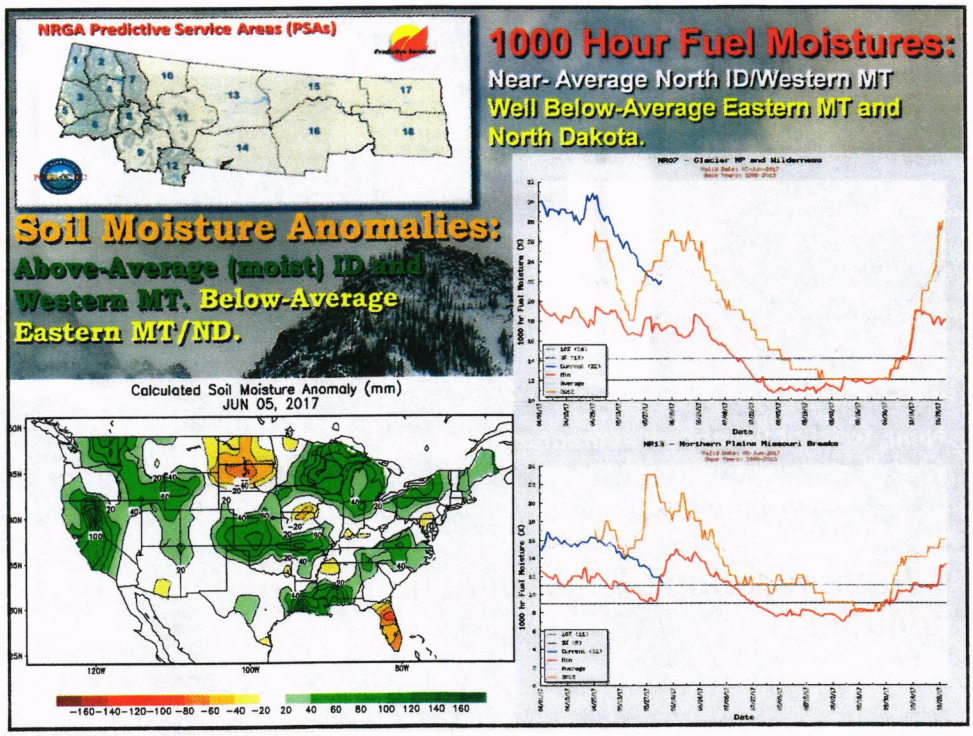

60 – Day Percent of Normal Precipitation and Temperature Summary
Percent of Average Precipitation (%)
4/7/2017 – 6/5/2017
NEAR-ABOVE AVERAGE NORTH IDAHO, PARTS OF WESTERN AND SOUTH/CENTRAL MONTANA.
VERY DRY MOST OF EASTERN MONTANA AND NORTH DAKOTA
Ave. Temperature dep from Ave (deg F)
4/7/2017 – 6/5/2017
NEAR-AVERAGE ALL AREAS


Water-Year Percent of Normal Precipitation and Temperature Summary
ABOVE-AVERAGE IDAHO AND MOST OF MONTANA
IN TOP 5 WETTEST SINCE 1948 MANY SITES
WETTEST IN BONNERS FERRY ID, BILLINGS AND KALISPELL
2ND WETTEST IN MISSOULA
Percent of Average Precipitation (%)
10/1/2016 – 6/5/2017
VERY DRY IN PORTIONS OF EASTERN MONTANA AND WESTERN NORTH DAKOTA.
Ave. Temperature dep from Ave (deg F)
10/1/2016 – 6/5/2017
COOLER THAN AVERAGE NORTH ID AND MOST OF WESTERN MT, PARTS OF CENTRAL MT. WARMER: EASTERN MT AND ND


Snowpack (SWE)
Peak Values Mid-April
Great Recoveries to Near to Above Average North ID and Western MT. Well Above-Average Yellowstone NP and S-Central MT. Still Below Average Central MT.
Westwide SNOTEL Current Snow Water Equivalent (SWE) % of Normal
Jan 04, 2017
Apr 19, 2017
Current Snow Water Equivalent (SWE) Basin-wide Percent of 1981-2010 Median
unavailable *
<50%
50 - 69%
70 - 89%
90 - 109%
110 - 129%
130 - 149%
>= 150%
Incredible Snowpack Sierra Nevada, and Great Basin Ranges! Above Normal OR and Portions WA Cascades.


Snow Depth
Storm Lake, Pintler Range, PSA 08, 8200 Feet
20 May, 2017
Near to slightly above average snowpacks occurred most PSAs, but were much above-average S-Central MT and Yellowstone NP (PSAs 12/14). Much slower melt this year than in 2015 and even 2016.
Duration/timing of melt more important than actual amounts.

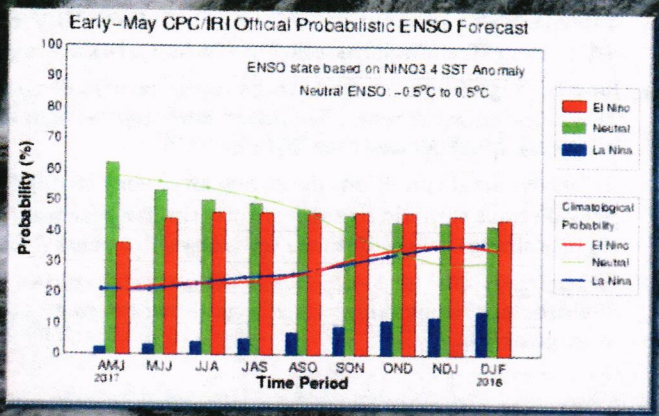

CURRENT DROUGHT STATUS:
None Occurring or Expected Over North ID/Western MT.
Short Term Slight-Moderate Drought Eastern MT/ND.
U.S. Drought Monitor
May 30, 2017
(Released Thursday, Jun. 1, 2017)
Valid 8 a.m. EDT
Drought Impact Types:
Delineates dominant impacts
S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)
L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)
Intensity:
D0 Abnormally Dry
D1 Moderate Drought
D2 Severe Drought
D3 Extreme Drought
D4 Exceptional Drought
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.
Author:
Chris Fenimore
NCEI/NESDIS/NOAA
http://droughtmonitor.unl.edu/


NRGA Predictive Service Areas (PSAs)
1000 Hour Fuel Moistures:
Near- Average North ID/Western MT
Well Below-Average Eastern MT and North Dakota.
Soil Moisture Anomalies:
Above-Average (moist) ID and Western MT. Below-Average Eastern MT/ND.
Calculated Soil Moisture Anomaly (mm)
JUN 05, 2017
-160 -140 -120 -100 -80 -60 -40 -20 20 40 60 80 100 120 140 160
NR07 - Glacier NP and Wilderness
NR13 - Northern Plains Missouri Breaks
1000 hr Fuel Moisture (%)
Date

Strong El Nino ended summer 2016, transitioned to weak La Nina last fall, then to ENSO-neutral this past winter. ENSO-neutral to persist into fall.

Very distinct climate signal. Similar To 1984.

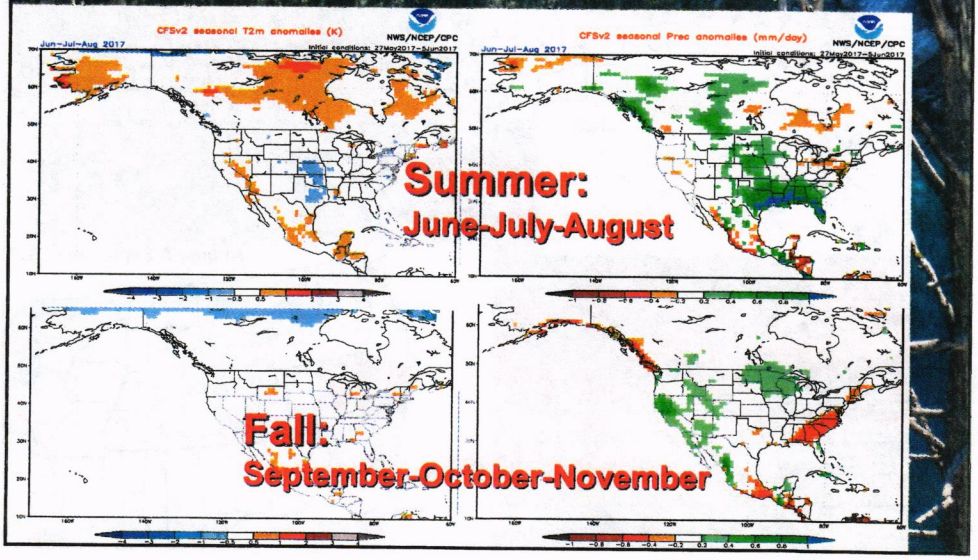
Slight similarities to 2004 and 2009.



These analog years all had near-to below average spring temperatures, near-average summer (Jun-Aug) temperatures and near-above average summer precipitation. All were under 250,000 acre seasons (2004: 40,840 and 2009: 69,016)

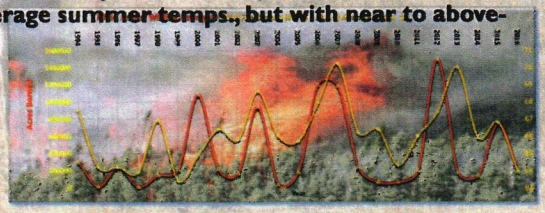
NOAA/NWS Climate Forecast System (CFS) Model Temperature and Precipitation Anomaly Outlooks

Near-Average JJA Temps., Near to Above-Average JJA Precip.
Near-Average SON Temps., Near to Above-Average SON Precip.



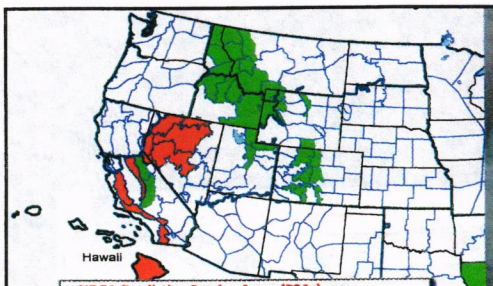
Thoughts on Fire Season 2017

- Drought absent over Western Half NRGA. Many areas much moister than average ID/Western MT. Dry Conditions Eastern MT/ND, Short Term Drought.
- Snowpack was Near to Above Average North ID/Western MT, Above Average S-Central MT and Yellowstone NP (PSAs 12/14), average melt rate.
- June through August: near-average temperatures likely with average or better precipitation most areas. Therefore fairly typical high elevation snowpack melting into June, much slower than 2015 or 2016.
- ENSO-Neutral conditions persisting after very strong El Nino the preceding year. Very distinct climatic signature; most similar year was 1984. 2004 and 2009 slightly similar. None of these were large fire years (>250,000 acres).
- Historical NRGA cycle suggests another year between peaks. Long-range temp. and precip. outlooks suggest average summer temps., but with near to above-average precip.



Other areas of concern: Alaska, SW, Southern GB, SoCal.

The factors assessed thus far lead to a prediction of Near-Average all PSAs through summer, with greatest potential Eastern MT, but below-average at mid/higher elevations Western PSAs in June and July.



June and July Significant Wildland Fire Potential Outlooks:

Below-Normal Significant Wildland Fire Potential Mid/Higher Elevations Western PSAs Except Normal in 05. Normal Lower Elevations and Central/Eastern Montana and North Dakota. Greatest Potential PSAs 13 Through 16.

August and September Significant Wildland Fire Potential Outlooks:

Normal all PSAs Except Normal in 05. Normal Lower Elevations and Central/Eastern Montana and North Dakota. Greatest Potential PSAs 13 Through 16.